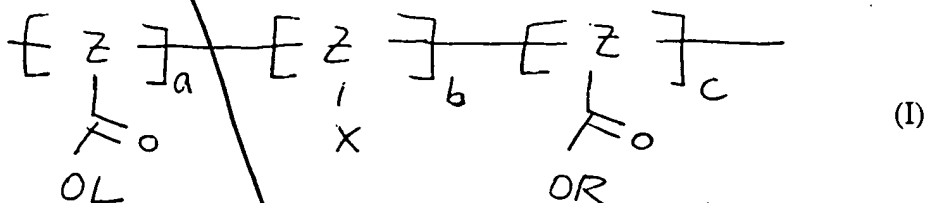


What is claimed is:

1. A positive-acting photoresist composition comprising a photoactid generator compound and a polymer that is substantially free of aromatic groups and that comprises pendant acid-labile groups that contain an optionally substituted isobornyl group, optionally substituted fenchyl, optionally substituted pinenyl, an optionally substituted 3,2,0 bridged-system, an optionally substituted 2,2,1-bridged system, optionally substituted heteroalicyclic group, optionally substituted cycloalkyl group having 3 or 4 ring carbon atoms, or optionally substituted alkenyl group.
2. A photoresist composition of claim 1 wherein the acid-labile groups comprise an optionally substituted isobornyl group.
3. A photoresist composition of claim 1 wherein the acid-labile groups comprise an optionally substituted heteroalicyclic group which upon reaction with photogenerated acid cleaves to form a stabilized delocalized cationic intermediate.
4. A photoresist composition of claim 1 wherein the acid-labile groups comprise an optionally substituted cycloalkyl group having 3 or 4 ring carbon atoms.
5. A photoresist composition of claim 1 wherein the acid-labile groups comprise an optionally substituted alkenyl group.
6. A photoresist composition of claim 5 wherein the alkenyl group is of the formula $-(CH_2)_{1 \text{ or } 2}-CH=CH_2$ and may be optionally substituted at available positions.

7. A photoresist composition of claim 1 wherein the polymer comprises repeating units corresponding to the following formula I:



wherein L is optionally substituted isobornyl group, optionally substituted fenchyl, optionally substituted pinenyl, an optionally substituted 3,2,0 bridged-system, an optionally substituted 2,2,1-bridged system, optionally substituted heteroalicyclic group, optionally substituted cycloalkyl group having 3 or 4 ring carbon atoms, or optionally substituted alkenyl group;

X is nitrile, optionally substituted alicyclic group, optionally substituted heteroalicyclic group, optionally substituted alkyl, optionally substituted alkenyl or optionally substituted alkynyl;

R is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted alkanoyl, or optionally substituted or unsubstituted heterocyclic having 1 to 3 ring members and 1 to about 3 hetero atoms;

Z is a bridge group between polymer units; and a, b and c are the mole percents of the respective polymer units.

8. A positive-acting photoresist composition comprising a photoacid generator compound and a polymer that is substantially free of aromatic groups and that comprises pendant acid-labile groups that have an anchimeric assistance value A that is greater than the anchimeric assistance value A provided by pendant polymer moieties of $-\text{C}(=\text{O})\text{Oadamantyl}$, $-\text{C}(=\text{O})\text{Onorbornyl}$, or $-\text{C}(=\text{O})\text{O cyclohexyl}$.

9. A method for forming a positive photoresist relief image, comprising:
a) applying a coating layer of a photoresist composition of claim 1 on a substrate; and
b) exposing and developing the photoresist coating layer to yield a positive tone relief image.

10. A method of claim 9 wherein the photoresist coating layer is exposed with radiation of a wavelength of less than about 250 nm.

11. A method of claim 9 wherein the photoresist coating layer is exposed with radiation of a wavelength of less than about 200 nm.

12. A method of claim 9 wherein the photoresist is exposed with radiation of a wavelength of about 248 nm or 193 nm.

13. A method for forming a positive photoresist relief image, comprising:
a) applying a coating layer of a photoresist composition of claim 8 on a substrate; and
b) exposing and developing the photoresist coating layer to yield a positive tone relief image.

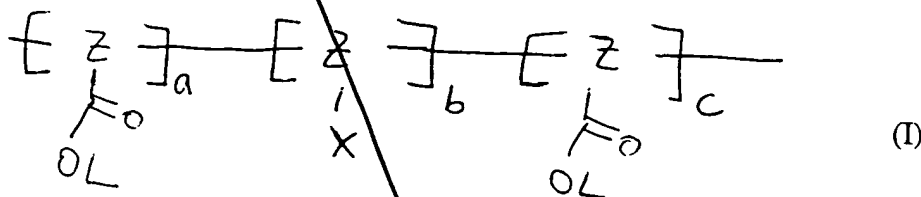
14. An article of manufacture comprising a substrate having coated thereon the photoresist composition of claim 1.

15. The article of claim 14 wherein the substrate is a microelectronic wafer or a flat panel display substrate.

16. An article of manufacture comprising a substrate having coated thereon the photoresist composition of claim 8.

17. The article of claim 16 wherein the substrate is a microelectronic wafer or a flat panel display substrate.

18. A polymer that comprises repeating units corresponding to the following Formula I:



wherein L is optionally substituted isobornyl group, optionally substituted fenchyl, optionally substituted pinenyl, an optionally substituted 3,2,0 bridged-system, an optionally substituted 2,2,1-bridged system, optionally substituted heteroalicyclic group, optionally substituted cycloalkyl group having 3 or 4 carbon atoms, or optionally substituted alkenyl group;

X is nitrile, optionally substituted alicyclic group, optionally substituted heteroalicyclic group, optionally substituted alkyl, optionally substituted alkenyl or optionally substituted alkynyl;

R is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted alkanoyl, or optionally substituted heterocyclic having 1 to 3 ring members and 1 to about 3 hetero atoms;

Z is a bridge group between polymer units; and a, b and c are the mole percents of the respective polymer units.

Add B1
Add C1